

# TVA Water Testing Results

SITE: TVA Kingston  
BREAK: 2.2  
OTHER: \_\_\_\_\_

In general, levels of contaminants in water increase as flows increase and decrease as flows recede. The higher flows and higher water velocities cause small particles of solid materials to be suspended in the water column. From the graph showing both the flow and the total arsenic levels, you can see that the total arsenic increased when the flow in the Emory River increased following storm events on January 7 and January 29. Other parameters (e.g., lead, iron, etc.) tend to follow the same pattern. Concentrations of dissolved constituents typically are much lower than the total concentrations of the same constituents, but they also tend to increase and decrease with stream flow.

In the data presented here, you will see designations as "Total" or "Dissolved". When the word "Total" is used, that means that a water sample is taken directly as it comes out of the river, is treated with acid, and then analyzed. The intent of this procedure is to dissolve or extract constituents of interest from tiny particles of suspended clay, soil, sediment or ash so they can be measured along with the material that is truly dissolved in the water. When the description "Dissolved" is used, that means a water sample is first passed through a filter with a very small pore size before being treated with acid and then analyzed as noted above. The intent of this procedure is to remove the tiny particles of solid materials suspended in the water so that the analysis shows only the constituents truly dissolved in the water.

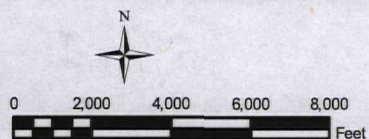
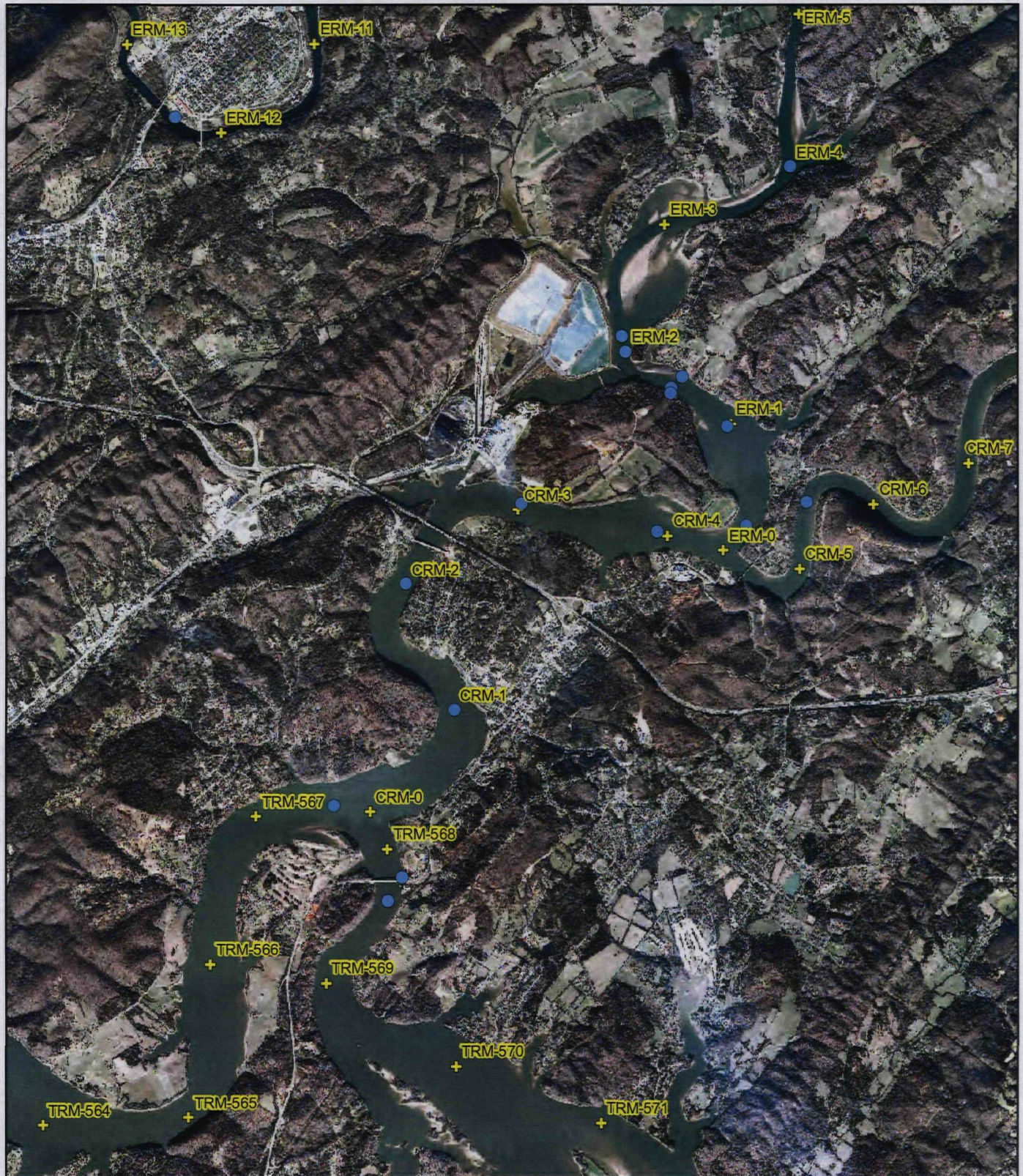
Only graphs for arsenic, flow, and total suspended solids are presented here, since arsenic is generally the constituent that is of greatest interest as a component of fly ash and it is strongly correlated with total suspended solids which is associated with high stream flow. In addition, as mentioned above, the patterns of concentrations of other constituents closely resemble the arsenic concentration patterns.

The map included shows sampling locations in the Emory, Clinch, and Tennessee Rivers.





# TVA River Sampling Locations



## Legend

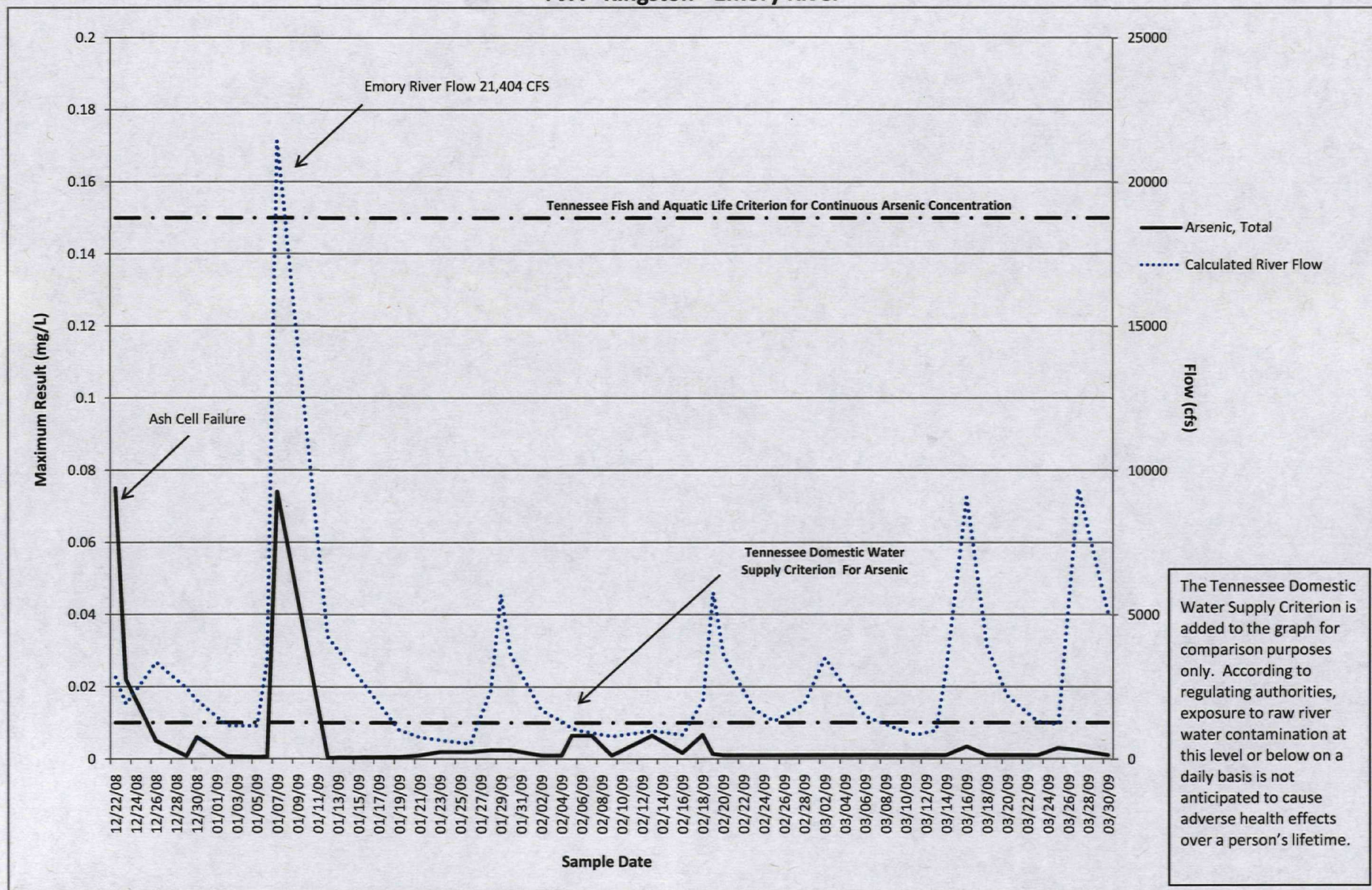
- Surface Water Sample Locations
- + River Miles
  - CRM - Clinch River Mile
  - ERM - Emory River Mile
  - TRM - Tennessee River Mile

Imagery Date: 2006  
 Sample Date: Through 02/20/2009  
 Map Compiled: 03/03/2009

Tennessee Valley Authority  
 OE&R - ER&S  
 Geographic Information & Engineering



**Figure 1**  
**Highest Result of Total Arsenic with River Flow Overlay**  
**TVA - Kingston - Emory River**

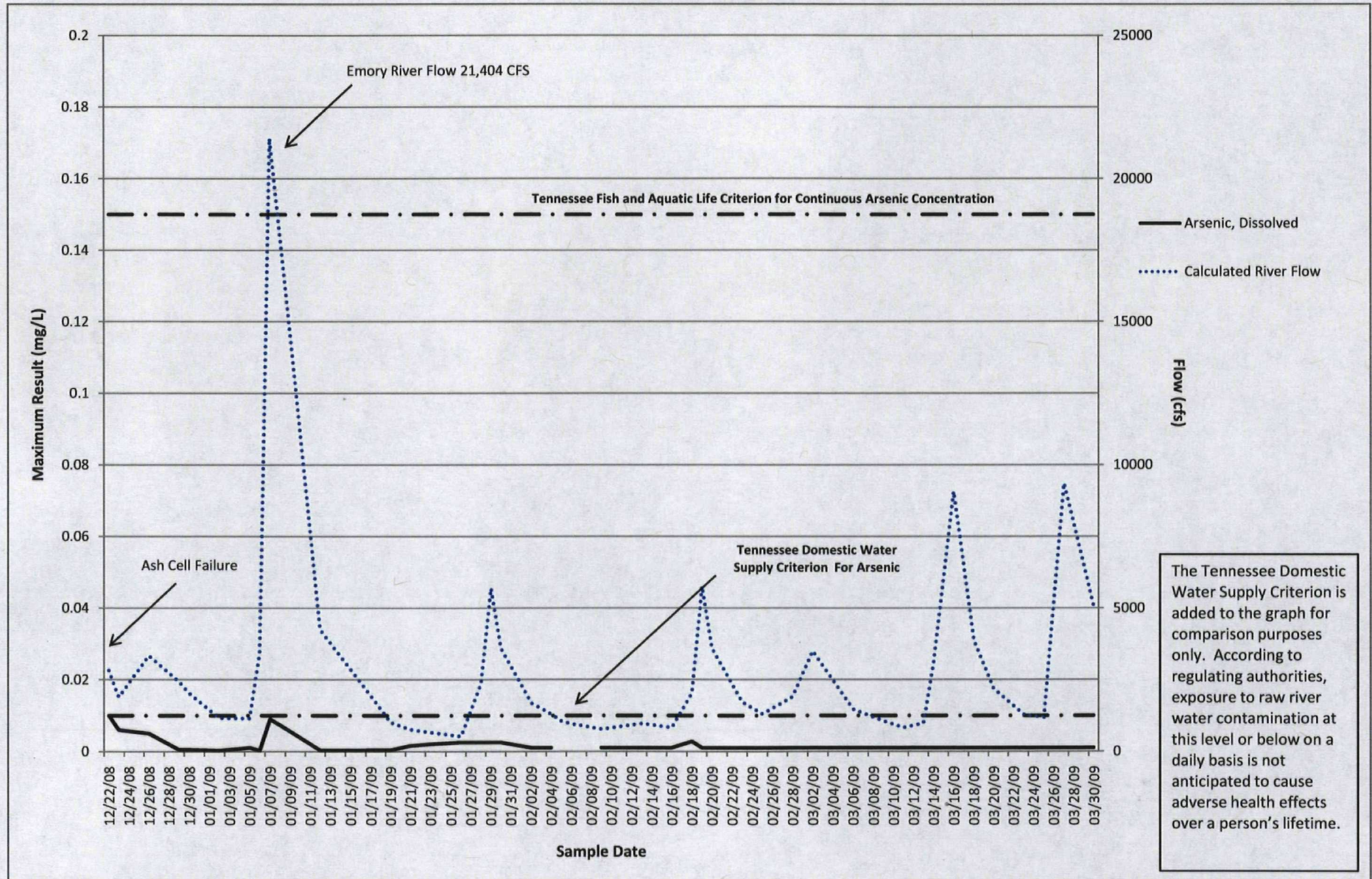


Note: The Result line represents the maximum value reported for Arsenic for any location for a given day on the Emory River - (See Figure 4)

Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



**Figure 2**  
**Highest Result of Dissolved Arsenic with River Flow Overlay**  
**TVA - Kingston - Emory River**

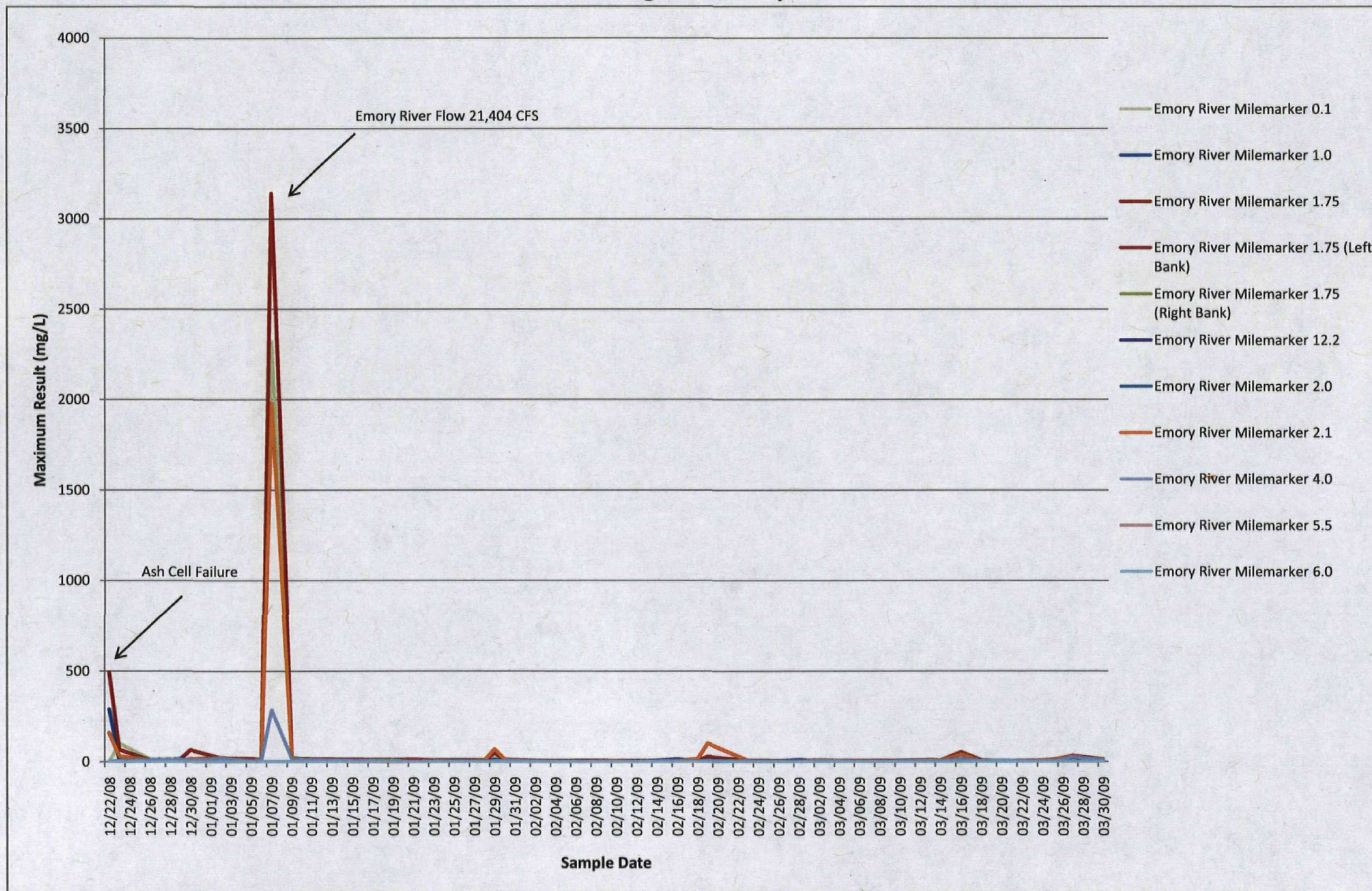


Note: The Result line represents the maximum value reported for Arsenic for any location for a given day on the Emory River (See Figure 5)

Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



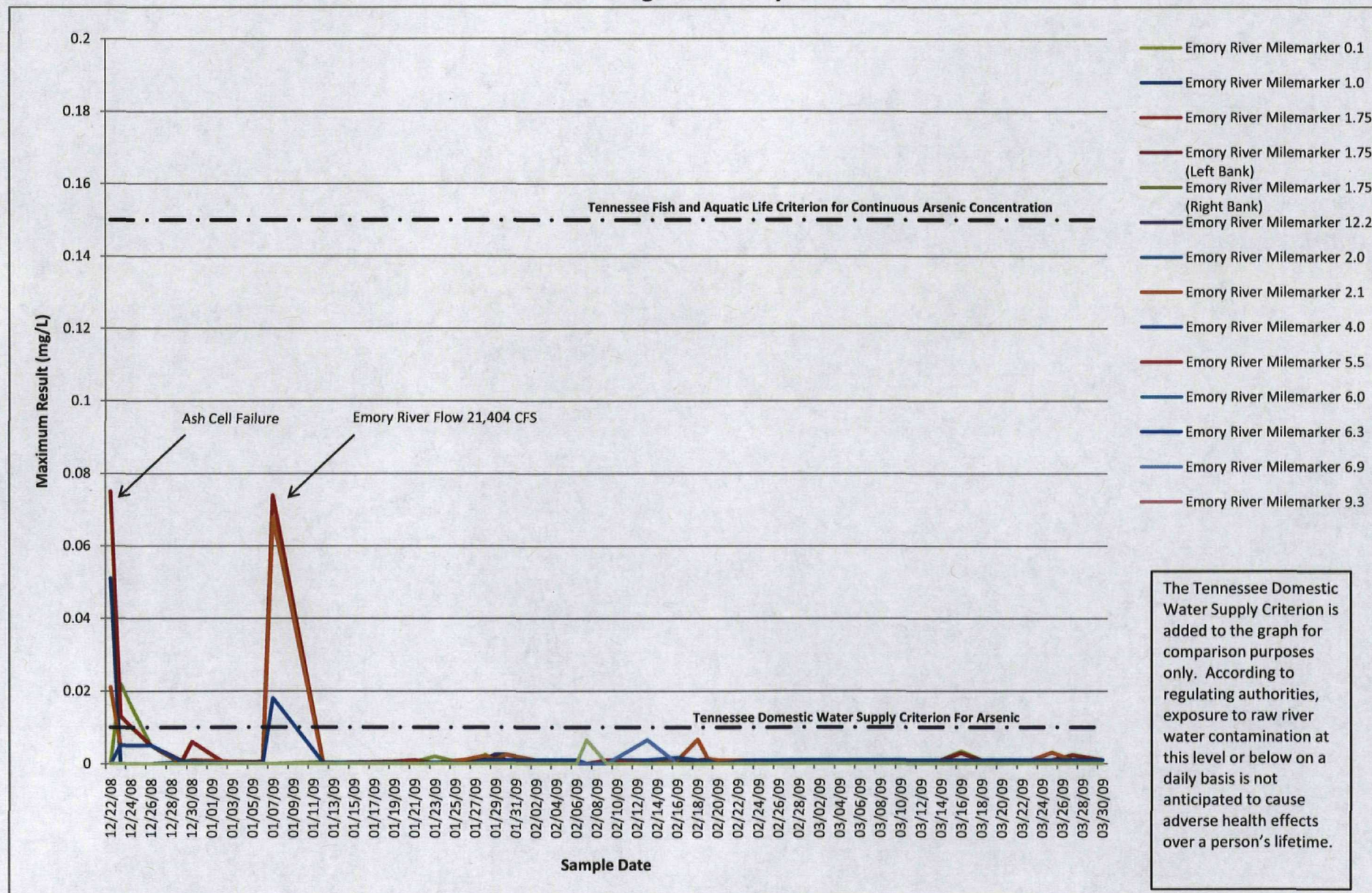
**Figure 3**  
**Total Suspended Solids**  
**TVA - Kingston - Emory River**



Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



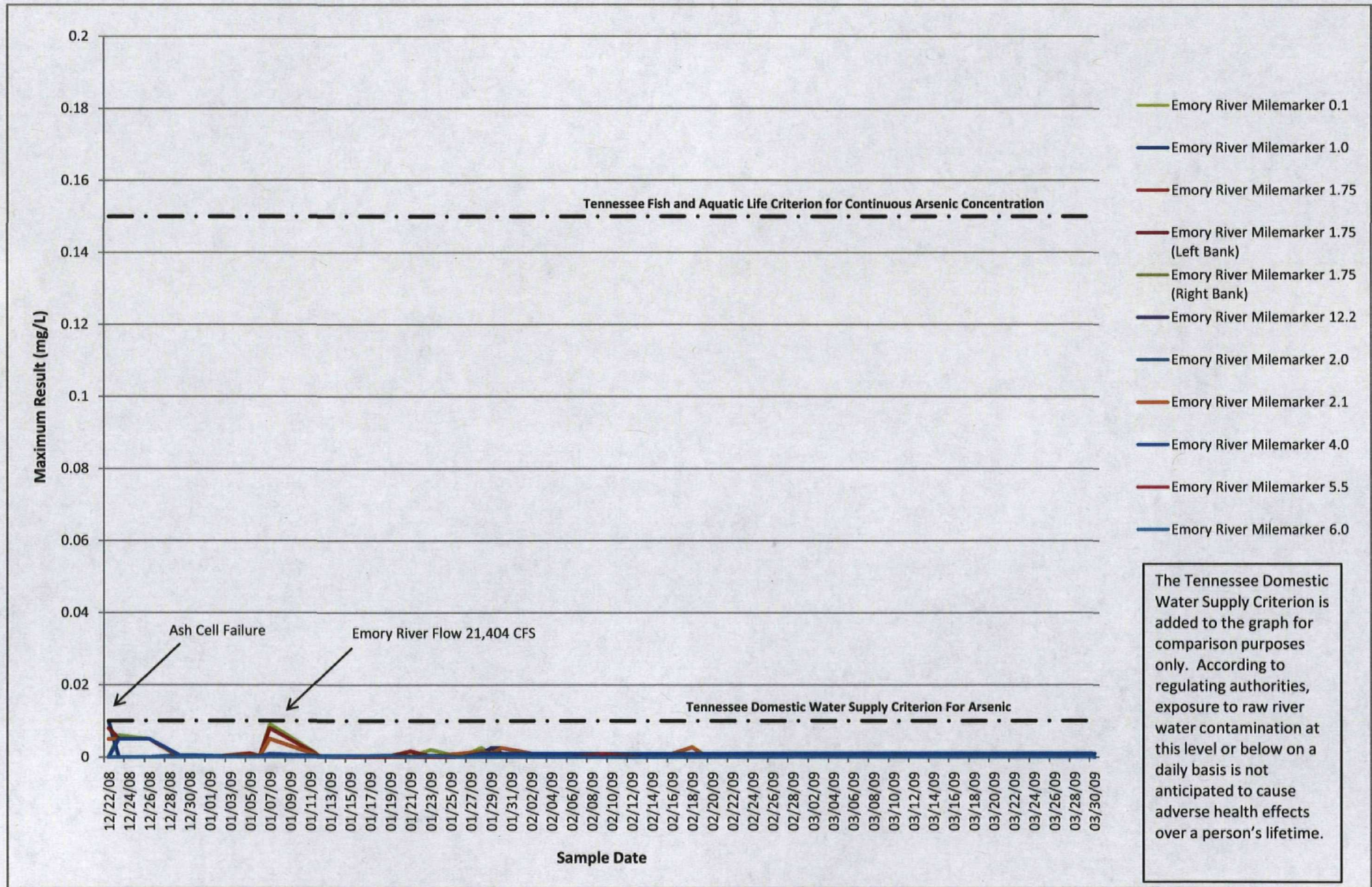
**Figure 4**  
**Arsenic, Total**  
**TVA - Kingston - Emory River**



Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



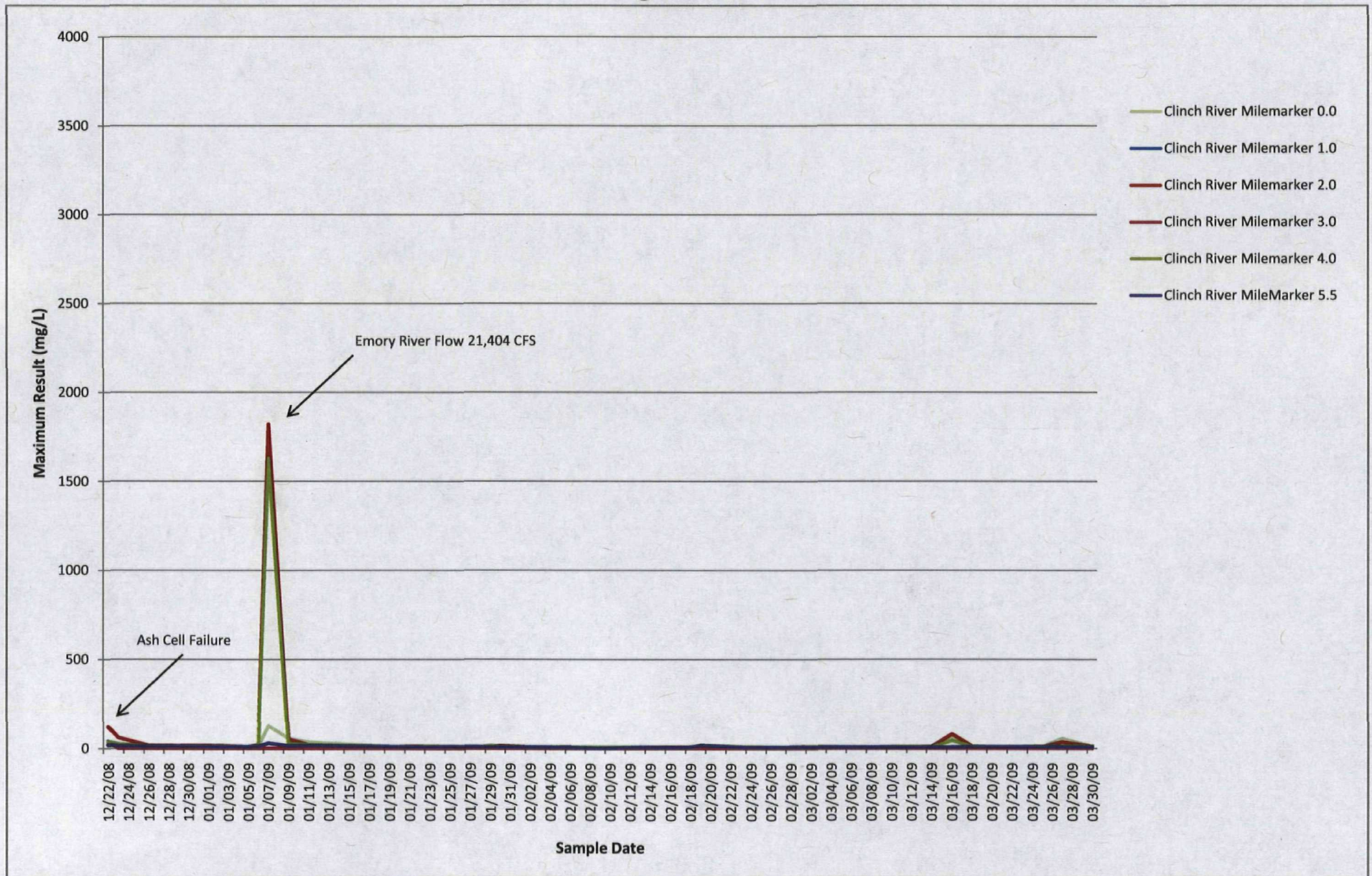
**Figure 5**  
**Arsenic, Dissolved**  
**TVA - Kingston - Emory River**



Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



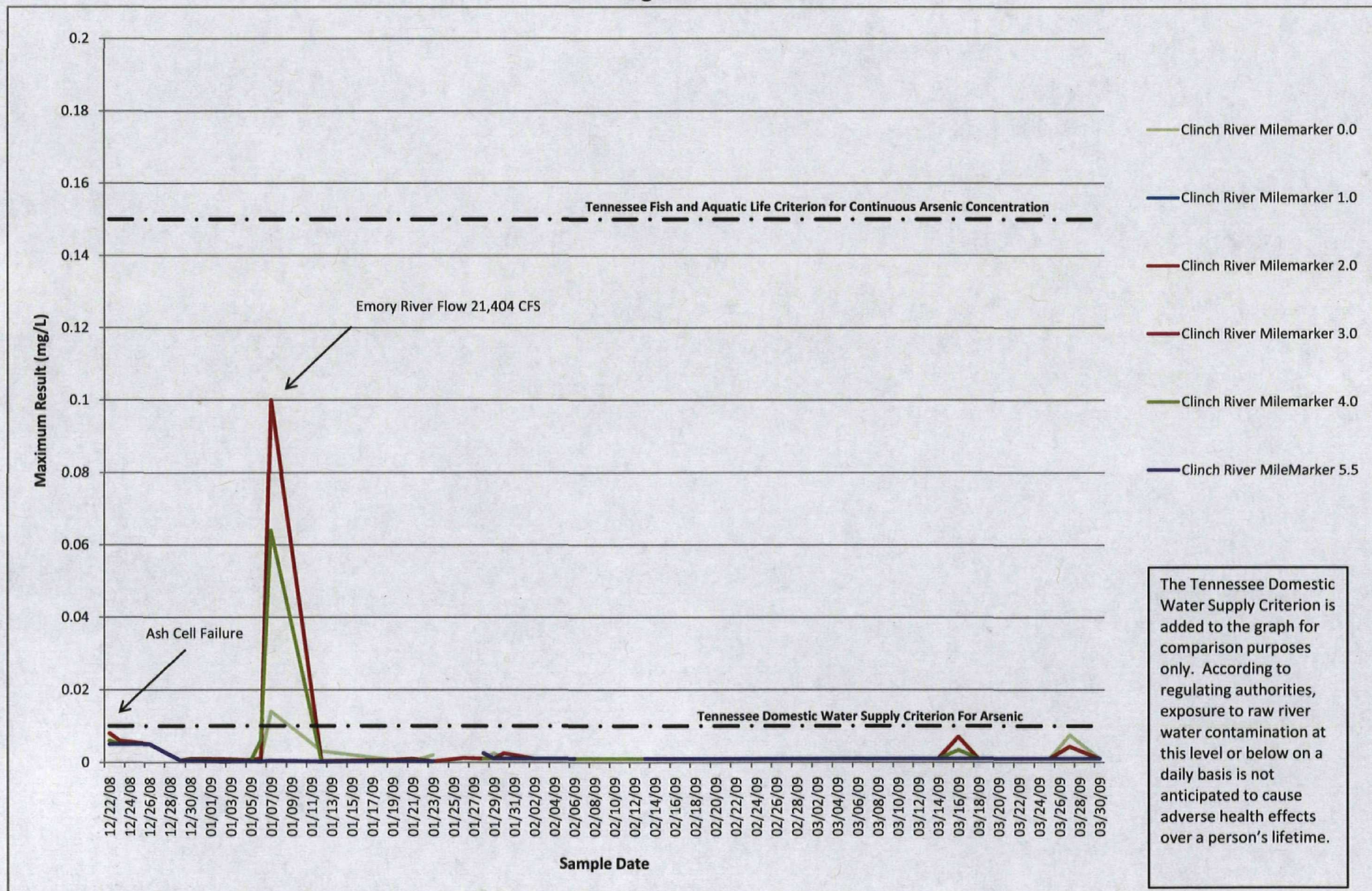
**Figure 6**  
**Total Suspended Solids**  
**TVA - Kingston - Clinch River**



Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



**Figure 7**  
**Arsenic, Total**  
**TVA - Kingston - Clinch River**

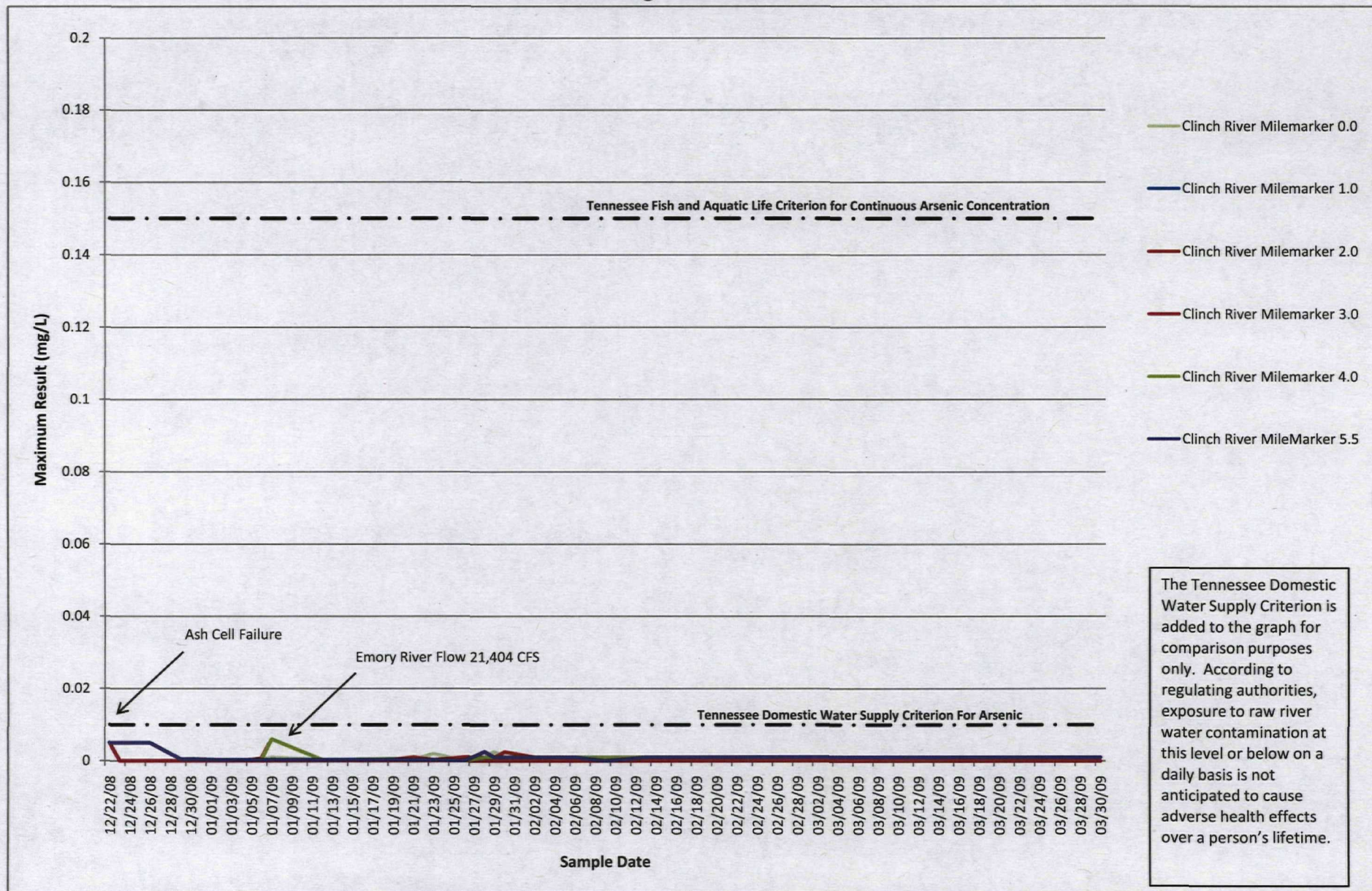


The Tennessee Domestic Water Supply Criterion is added to the graph for comparison purposes only. According to regulating authorities, exposure to raw river water contamination at this level or below on a daily basis is not anticipated to cause adverse health effects over a person's lifetime.

Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



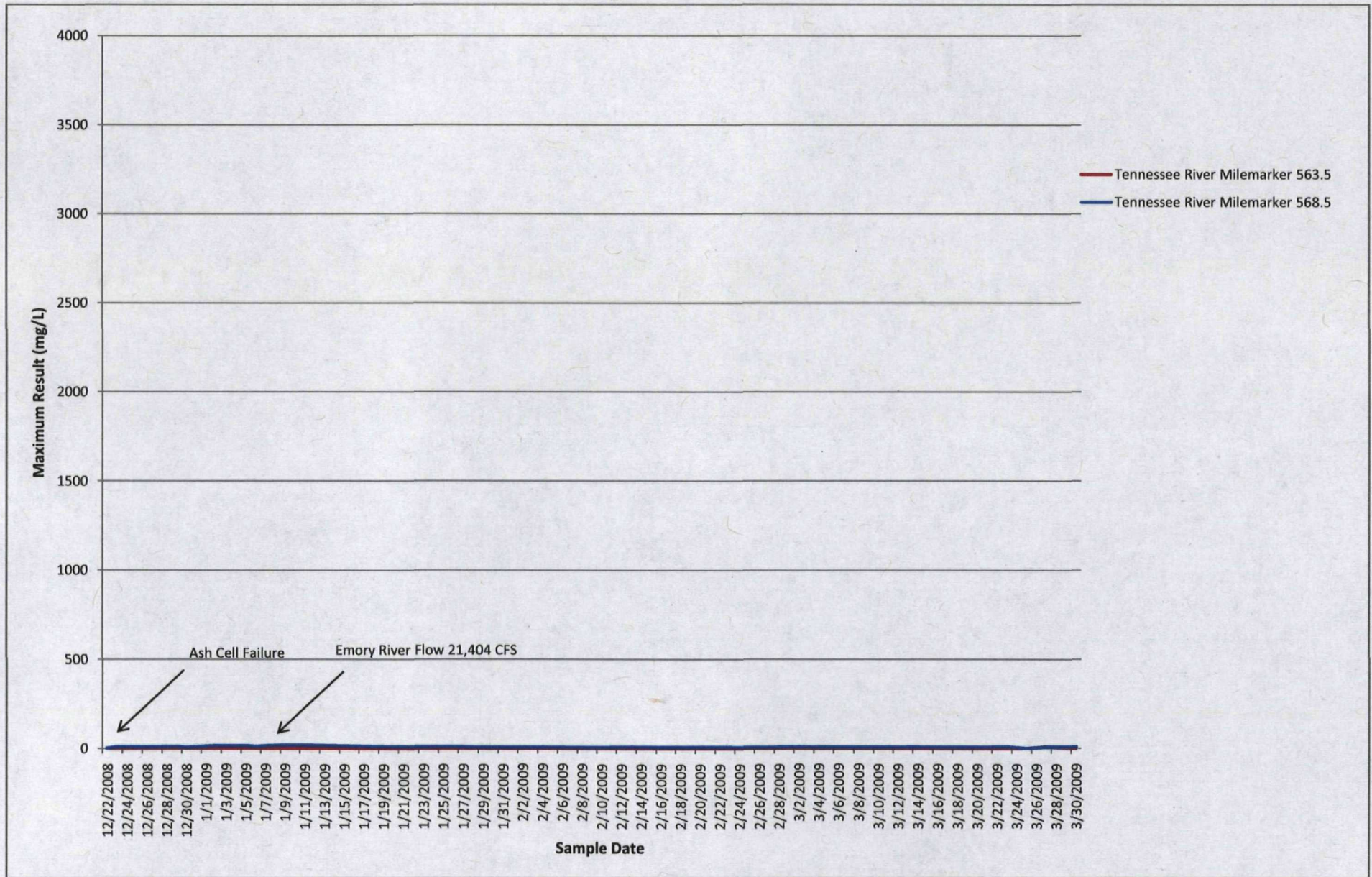
**Figure 8**  
**Arsenic, Dissolved**  
**TVA - Kingston - Clinch River**



Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



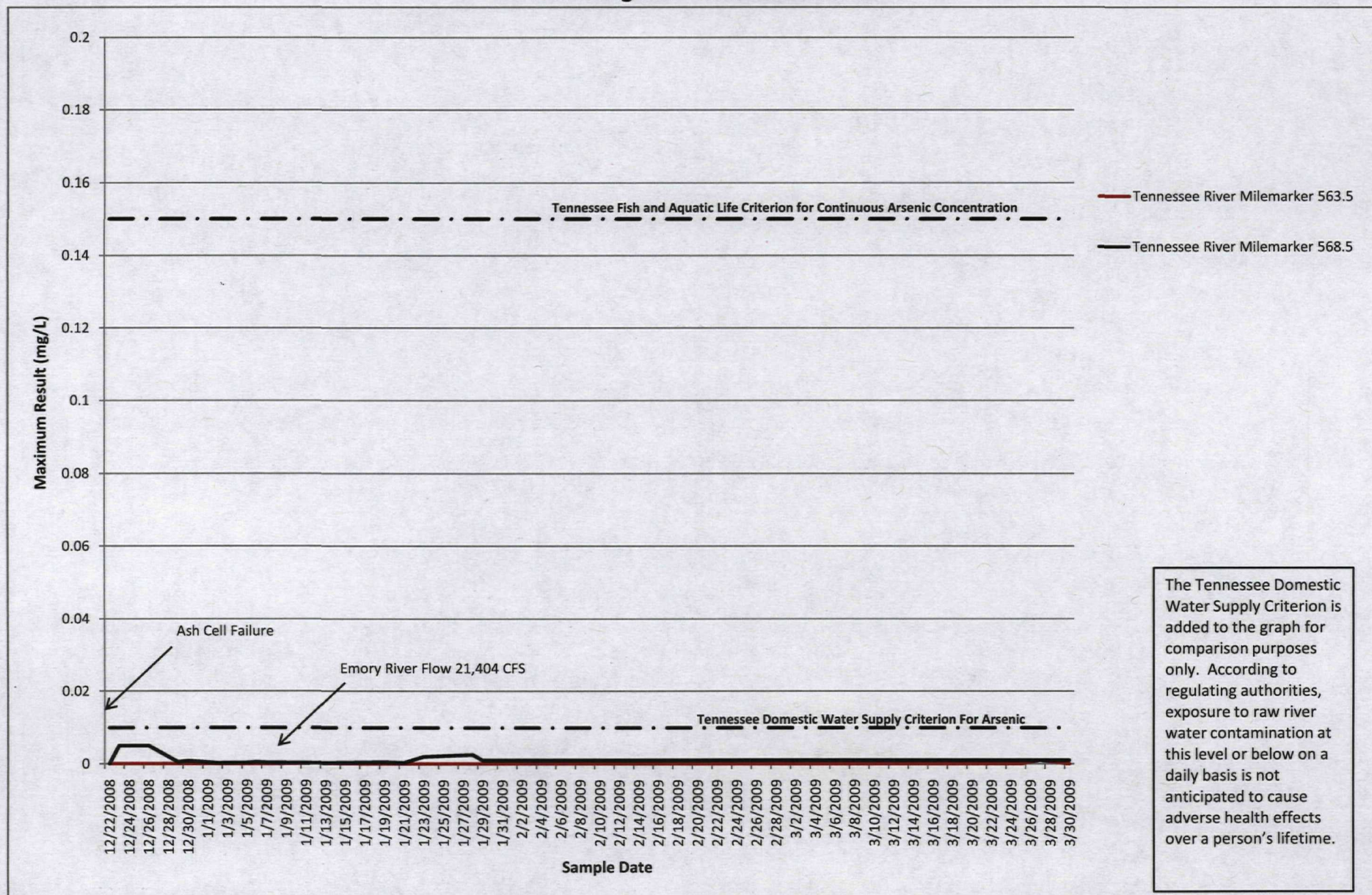
**Figure 9**  
**Total Suspended Solids**  
**TVA - Kingston - Tennessee River**



Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



**Figure 10**  
**Arsenic, Total**  
**TVA - Kingston - Tennessee River**

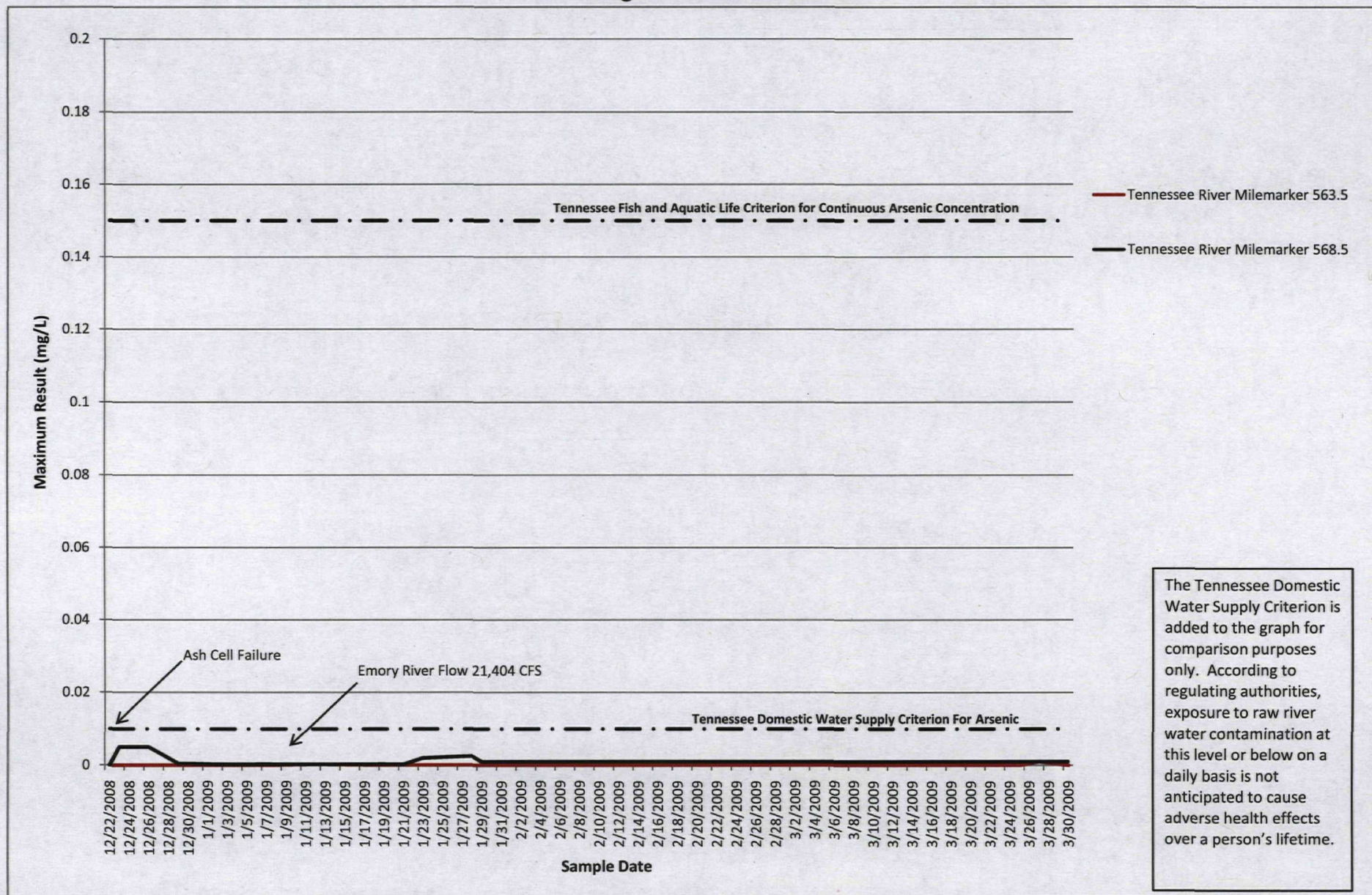


The Tennessee Domestic Water Supply Criterion is added to the graph for comparison purposes only. According to regulating authorities, exposure to raw river water contamination at this level or below on a daily basis is not anticipated to cause adverse health effects over a person's lifetime.

Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.



**Figure 11**  
**Arsenic, Dissolved**  
**TVA - Kingston - Tennessee River**



The Tennessee Domestic Water Supply Criterion is added to the graph for comparison purposes only. According to regulating authorities, exposure to raw river water contamination at this level or below on a daily basis is not anticipated to cause adverse health effects over a person's lifetime.

Note: Samples where Arsenic is not detected are reported at one-half the lowest concentration that laboratory instruments can reliably measure.